Icarus

INTERNATIONAL JOURNAL OF SOLAR SYSTEM STUDIES

Volume 84 • 1990

EDITOR: *Joseph A. Burns*
ACTING EDITORS: *Peter J. Gierasch*
Joseph Veverka

Space Sciences Building
Cornell University
Ithaca, New York, 14853-6801

ACADEMIC PRESS, INC.
Harcourt Brace Jovanovich, Publishers
San Diego New York Boston
London Sydney Tokyo Toronto

Copyright © 1990 by Academic Press, Inc.

ALL RIGHTS RESERVED

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the copyright owner.

The appearance of the code at the bottom of the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made for personal or internal use, or for the personal or internal use of specific clients. This consent is given on the condition, however, that the copier pay the stated per copy fee through the Copyright Clearance Center, Inc. (27 Congress Street, Salem, Massachusetts 01970), for copying beyond that permitted by Sections 107 or 108 of the U.S. Copyright Law. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale. Copy fees for pre-1990 articles are as shown on the article title pages; if no fee code appears on the title page, the copy fee is the same as for current articles.

0019-1035/90 $3.00

MADE IN THE UNITED STATES OF AMERICA

CONTENTS OF VOLUME 84

Number 1, March 1990

W. B. Hubbard, Roger V. Yelle, and Jonathan I. Lunine. Nonisothermal Pluto Atmosphere Models 1

J. C. Pearl, B. J. Conrath, R. A. Hanel, J. A. Pirraglia, and A. Coustenis. The Albedo, Effective Temperature, and Energy Balance of Uranus, as Determined from Voyager IRIS Data 12

Anthony D. Del Genio and Kevin B. McGrattan. Moist Convection and the Vertical Structure and Water Abundance of Jupiter's Atmosphere 29

Sang Kim, Pierre Drossart, John Caldwell, and Jean-Pierre Maillard. Temperatures of the Jovian Auroral Zone Inferred from 2-μm H_2 Quadrupole Line Observations 54

Rainer Haus and Hartwin Goering. Radiative Energy Balance of the Venus Mesosphere 62

Paul G. Steffes, Michael J. Klein, and Jon M. Jenkins. Observations of the Microwave Emission of Venus from 1.3 to 3.6 cm 83

Ann L. Sprague. A Diffusion Source for Sodium and Potassium in the Atmospheres of Mercury and the Moon 93

Joseph W. Chamberlain. Calculation of Polarization and Anisotropy of Resonant and Fluorescent Scattering 106

A. Körösmezey and T. I. Gombosi. A Time-Dependent Dusty Gas Dynamic Model of Axisymmetric Cometary Jets 118

K. Magee-Sauer, F. Scherb, F. L. Roesler, and J. Harlander. Comet Halley O(^{1}D) and H_2O Production Rates 154

John A. Grant and Peter H. Schultz. Gradational Epochs on Mars: Evidence from West-Northwest of Isidis Basin and Electris 166

Anastassia Kanavarioti and Rocco L. Mancinelli. Could Organic Matter Have Been Preserved on Mars for 3.5 Billion Years? 196

Bonnie Buratti, Felicity Wong, and Joel Mosher. Surface Properties and Photometry of the Uranian Satellites 203

Janusz Eluszkiewicz. Compaction and Internal Structure of Mimas 215

Kevin R. Housen and Keith A. Holsapple. On the Fragmentation of Asteroids and Planetary Satellites 226

Morris Podolak, T. E. Bunch, Pat Cassen, Ray T. Reynolds, and S. Chang. Processing of Refractory Meteorite Inclusions (CAIs) in Parent-Body Atmospheres 254

Notes

Mark D. Hofstadter, Glenn L. Berge, and Duane O. Muhleman. Vertical Motions in the Uranian Atmosphere: An Analysis of Radio Observations 261

Alfred S. McEwen and Jonathan I. Lunine. Comment on "The Surface of Io: A New Model" by Bruce Hapke 268

Book Review

J. B. Breckinridge. *Astronomical Optics*. By Daniel J. Schroeder 275

NUMBER 2, APRIL 1990

IN MEMORIAM

M. YA. MAROV AND V. A. BRONSHTEN. Boris Yuljevich Levin (1912–1989) 277

REGULAR ARTICLES

V. S. SOLOMATOV AND V. N. ZHARKOV. The Thermal Regime of Venus 280

M. I. MISHCHENKO. Physical Properties of the Upper Tropospheric Aerosols in the Equatorial Region of Jupiter 296

L. O. KOLOKOLOVA. Dependence of Polarization on Optical and Structural Properties of the Surfaces of Atmosphereless Bodies 305

EDWARD A. CLOUTIS, MICHAEL J. GAFFEY, DORIAN G. W. SMITH, AND RICHARD ST J. LAMBERT. Reflectance Spectra of Mafic Silicate–Opaque Assemblages with Applications to Meteorite Spectra 315

S. J. OSTRO, K. D. ROSEMA, AND R. F. JURGENS. The Shape of Eros 334

MARK D. HOFSTADTER AND BRUCE C. MURRAY. Ice Sublimation and Rheology: Implications for the Martian Polar Layered Deposits 352

PETER J. MOUGINIS-MARK. Recent Water Release in the Tharsis Region of Mars 362

RONALD GREELEY, STEVEN W. LEE, DAVID A. CROWN, AND NICHOLAS LANCASTER. Observations of Industrial Sulfur Flows: Implications for Io 374

FRASER P. FANALE AND JAMES R. SALVAIL. The Influence of CO Ice on the Activity and Near-Surface Differentiation of Comet Nuclei 403

J. F. CRIFO. Water Clusters in the Coma of Comet Halley and Their Effect on the Gas Density, Temperature, and Velocity 414

S. ALAN STERN. ISM-Induced Erosion and Gas-Dynamical Drag in the Oort Cloud 447

JEFFREY N. CUZZI AND RICHARD H. DURISEN. Bombardment of Planetary Rings by Meteoroids: General Formulation and Effects of Oort Cloud Projectiles 467

KEVIN ZAHNLE, JAMES F. KASTING, AND JAMES B. POLLACK. Mass Fractionation of Noble Gases in Diffusion-Limited Hydrodynamic Hydrogen Escape 502

D. G. KORYCANSKY, P. BODENHEIMER, P. CASSEN, AND J. B. POLLACK. One-Dimensional Calculations of a Large Impact on Uranus 528

NOTE

K. AKSNES AND F. FRANKLIN. Predictions of Mutual Phenomena of the Galilean Satellites in 1990–1992 542

AUTHOR INDEX FOR VOLUME 84 547

NOTICE

The Subject Index for Volume 84 will appear in the December 1990 issue as part of a cumulative index for the year 1990.